Governor's Task Force on STEM

Minutes of the April 17, 2014 meeting

Executive Council Chambers – Concord, NH

Attendance: Ross Gittell, Chairman; Brian Blake; Barbara Couch; Joyce Craig; Susan D'Agostino; Mary Kate Hartwell; Joseph Helble; Caroline Herold; Robert Hollowell; Dean Kamen; Todd Lamarque; Paul Leather; Palligarnai Vasudevan.

Absent: Jeremy Hitchcock.

I. **Governor Hassan & Introductions**

Governor Hassan opened the initial meeting of the Governor's Task Force on STEM at 4:00 pm by welcoming members and asking them to introduce themselves.

II. **Review of Executive Order 2014-01**

The Governor then offered greetings and reiterated the charge contained in the executive order that the task force develop recommendations to ensure that New Hampshire students are prepared for today's technology-driven society. She addressed the importance of the work the task force is undertaking to the future of our state. Among the tasks is the need to review our standards (are they rigorous enough?) and the way we teach them. Current teaching strategies provide much information, but not necessarily in a "hands on" way. State standards are a floor, not a ceiling. Governor Hassan acknowledged that there may be potential barriers to moving forward with the goals of the Task Force, but encouraged members to develop a vision of what is necessary to successfully meet the goals. She stressed that we can address the barriers going forward, so urged members to not let barrier concerns hold back on the vision. She asked that members hold the following question, "What should I recommend to the State Board of Education?"

III. **Discussion of Objectives**

Chairman Gittell acknowledged that this is an exciting opportunity. Then discussion moved around to each member so that they could share topics of importance and potential direction for the group. The following are key topics of concerned listed by member:

- Brian Blake – competency based grading; pathways; generate interest in STEM areas in grade school. Need teachers to be excited.
- Barbara Couch – Referenced NH Charitable Foundation's **STEM study -** The recommendations apply to the work of this group.
  [Note by the CHAIR - This report will be shared with membership and we will plan to schedule a webinar (recorded) on this.]
- Joyce Craig – STEAM Ahead NH project in Manchester; students not leaving high school college ready; bussing employees to DYN; new standards recommended for college and career readiness.
- Robert Hollowell – Career pathways; Project Learning Tree;
  Examine current approved CTE programs (e.g., robotics) – can we add more that are STEM related? How to handle intense subject-based curriculum and be sure to integrate with any new standards (e.g., 4 years of math & science might make it impossible for auto mechanic to fit all current classes and the add'l requirements).

Challenge: K-5 teachers not interested in science/math, could we engage business at the classroom level to excite students in real world STEM projects? ;
[Note from CHAIR – Lets look to see if we can create a systemic way to bring resources together at state level and make them available to local across the states, e.g., Clearinghouse, Mentors, Speakers Bureau.]

- Mary Kate Hartwell – Raymond is starting summer science workshop, K-4; two days on STEM this year for elementary teachers. We should look at Next Gen Science Standards, as her school is doing and develop classroom activities based on them.
- Joseph Helble – Interested in finding a way to push the "E" in STEM. It is not just science and math that comprises engineering.
- Caroline Herold – Common Core has raised the baseline in middle school . Challenge: delivering work in an interesting manner to students (inspire creativity). Require four years of math in high school. One way to engage kids is to offer engineering classes to address math.
- Susan D'Agostino – Students don't think of math as a major or a field they could be successful in. She has created internships at SNHU to attract students to math-related occupations. Who is the demographic we need to reach? We need to particularly attract lower socio-economic students and young women to STEM pathways traditionally dominated by young men and mid to upper socio-economic families.
- Dean Kamen - Everyone knows that he began FIRST and it has become a massive success nationally and internationally. He approached the design in order to get students highly energized and engaged in real problems using science and math. He also asked Corporations and people for their participation, not money. We need to incentivize mentoring – one way would be to offer continuing education credits for mentors. It is important to engage all stakeholders in one large, systemic problem, e.g., finding an efficient way to get kids excited. We need to organize around one big goal e.g., putting FIRST in every school in state, for example; and make it explicit and measurable.
- At this point in the conversation, several members offered alternative single large goals:
  - Herold – Require 4 years of Math.
  - D'Agostino - Every student should be required to build a robot. This as a Big Goal would get lots of attention from families/students/many stakeholders across the state. It would get everyone's talking.
  - Chair – How about goals of getting every NH child and youth excited about STEM? How about having each student have a career plan with a education map – Minnesota does this.
- Todd Lamarque – We need to think about ways to get this moving at each level – grade/middle/ high school? Teacher prep should do more to combine disciplines, math-science, chemistry-physical science, etc. We need a fundamental change in teaching at all levels.
- Paul Leather – We know from research that if we engage students in rich work and raise standards and address educator capacity (incl. teacher/family/community); we will see student performance increase greatly.
- Palligarnai Vasudevan – has worked to create better articulated pathways from CCSNH to UNH. Post-Secondary has a Goal: double STEM majors by 2025. To do

this we need to train 4th and 5th grade students. Right now there are few women in STEM field. Guidance counselors are not currently directing students toward STEM field.

IV. **Work Plan --**

The Chair posed the following…..

that the Task Force focus first and foremost on:

How do "we" excite NH children and youth (K-12 students) about STEM, and about STEM career pathways?

And following from this he addressed the questions/issues that need to be discussed.

Metrics. What metrics should we focus on that best capture progress on the above? For example: participation in STEM event(s) and competition(s) among NH children and youth; performance on STEM assessment tests (e.g., 4th, 8th and 11th grade proficient and with distinction percentages on subject matter tests; ACT-tested high school graduates meeting or exceeding college readiness benchmarks on all four subjects); applications/enrollments in STEM fields at our public and private higher education institutions?

Resources. What resources and practices are required to excite students about STEM and advance their learning and educational achievement along STEM pathways? Which of these resources already exist, what resources need to be added and how can we can make the best STEM resources and practices available across NH in "Clearinghouse" and other ways?

Empowering Educators. How do we support/empower educators (teachers and parents) in exciting students children and youth about STEM and advancing student STEM achievement?

Standards. From the above what standards/"floors" are required in K-12 education in science, technology, engineering and math? For example: should 4-years/every year of math be required in high school; what type of math pathways should be available to students; should computer science/IT be required; what integrative STEM courses should be required in primary, middle and high school; what engineering course and experiences should be required; should experiential learning be required; and should all students be required to have career pathway maps starting in middle school?

Members agreed that bold ideas and proposals (e.g., about required participation in strong programs with proven results) would be part of our considerations. And we agreed, reading the Governor's executive order, to address all its points (e.g., see standards above).

V. Review of Right to Know (RSA 91-A)

An information sheet outlining the Right to Know law was distributed and Chairman Gittell briefly reviewed the requirements. The meetings, minutes and votes are public. This document will be attached to these meeting minutes.

VI. Scheduling of Meetings

It was decided that the group continue meeting as a whole without breakout groups, at least initially, and meet every two weeks, likely on Tuesdays or Thursdays from 4:00 – 5:30. Meetings will be posted in advance, per right to know law.

VII. Public Feedback/Discussion Board

The group plans to have an electronic (social media) public discussion board for posting updates on task force discussions and obtain feedback and suggestions. Recommendations for best platform are welcomed.

VIII. Other

Meeting adjourned at 5:30.

Respectfully submitted,

Shirley Hadley

Attachments – Executive Order 2014-01
Info on Right to Know Law
Meeting Agenda